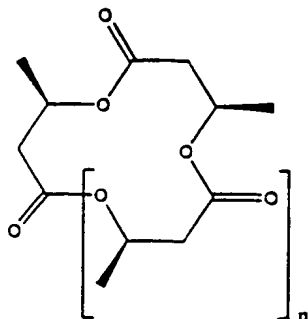


CLAIMS.

1. A cyclic ester of (R)-3-hydroxybutyrate of formula (I)



where n is an integer of 1 or more

or a complex thereof with one or more cations or a salt thereof
for use in therapy or nutrition.

2. A compound as claimed in claim 1 wherein the one or more cations are selected from the group consisting of sodium, potassium, magnesium and calcium or where the compound is a free uncomplexed oligolide.
3. A compound as claimed in claim 1 or claim 2 wherein n is an integer from 1 to 20.
4. A compound as claimed in Claim 1 wherein it is (R, R, R)-4, 8, 12-trimethyl-1, 5, 9-trioxadodeca-2, 6, 10-trione.
5. A method of treating a cell that is subject to malfunction due to action of free radicals, toxic agents such as peptides and proteins and genetic defects deleterious to cell metabolism, insulin resistance or other glucose metabolism defects or defect inducing states, ischemia, head trauma, and/or for increasing cell efficiency characterised in that it comprises administration of a cyclic oligomer of formula (I).
6. A method as claimed in claim 4 characterised in that the cyclic oligomer of formula (I) acts as a neuronal stimulant eg capable of stimulating axonal and/or dendritic growth in nerve cells, eg. in hippocampal or substantia nigral cells, *in vivo*

or *in vitro*, particularly in conditions where neuro-degeneration has serious clinical consequences.

7. A method of accomplishing enteral or parenteral nutrition, preferably oral route nutrition, comprising administration of a cyclic oligomer of formula (I) in physiologically acceptable form, optionally in a physiologically acceptable carrier.
8. A method of producing a physiologically acceptable ketosis in a human or animal comprising oral administration of a cyclic oligomer of formula (I).
9. A method as claimed in Claim 8 wherein the human or animal is fed less than 50% by weight of its caloric content of its diet as fat.
10. A method as claimed in Claim 8 wherein the human or animal is fed from 0 to 25% by weight of its caloric content of its diet as fat.
11. A method as claimed in Claim 7 or 8 wherein the method is performed on a patient needing therapy for one or more of Alzheimer's, Parkinsonism, Amyotrophic lateral sclerosis, Epilepsy, Free radical disease, Heart failure, Type II diabetes, deficiency or blockage of pyruvate dehydrogenase, inability to perform glycolysis in one or more cell types and Duchenne's muscular dystrophy.
12. A method of providing a caloric substitute for carbohydrate for the purpose of lowering blood glucose comprising administering a composition comprising a cyclic oligomer of formula (I) to a human or animal subject in need of such substitution.
13. A method of providing a caloric substitute for carbohydrate for the purpose of body lipid content reduction comprising administering a composition comprising a cyclic oligomer of formula (I) to a human or animal subject in need of such reduction.
14. A method of increasing the efficiency of mitochondrial energy production in a human or animal not suffering from a chronic or acute metabolic disease comprising

administering to the human or animal an amount of a cyclic oligomer of formula (I) sufficient to raise blood levels of (R)-3-hydroxybutyrate to from 0.5 to 20mM.

15. A method as claimed in Claim 14 wherein the level is raised to from 1 to 10mM.
16. The use of a cyclic ester formula I for the manufacture of a medicament for the treatment of disease states mediated by free radicals, toxic agents such as peptides and proteins, genetic defects deleterious to cell metabolism, insulin resistance or other glucose metabolism defects or defect inducing states, ischemia, head trauma, or for increasing cell efficiency.
17. A composition characterised in that it comprises a cyclic oligomer of formula (I) in physiologically acceptable form.
18. A composition as claimed in claim 11 characterised in that it includes a physiologically acceptable carrier.